

1,184,332.

2 SHEETS—SHEET 1.

Fig. 1

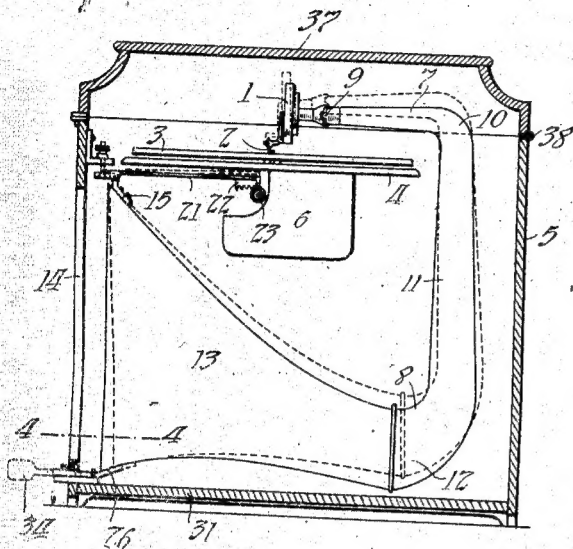


Fig. 3

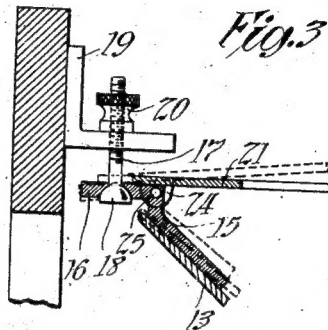


Fig. 2

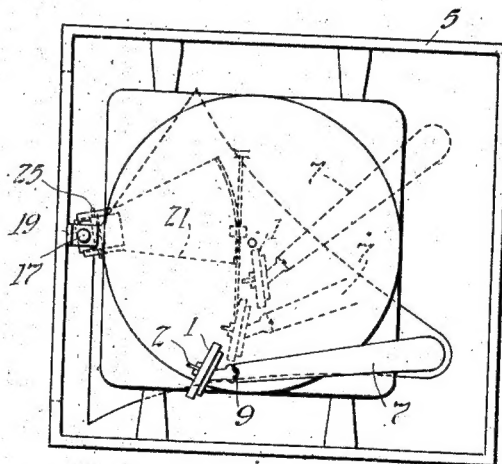
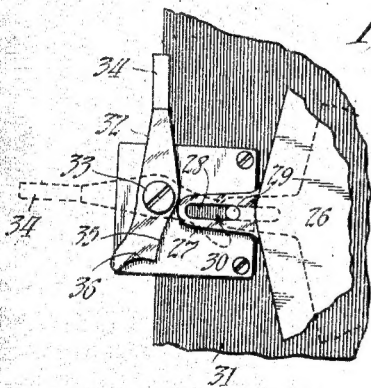


Fig. 4



Witnesses:
Frank D. Lewis
Dyer Smith

Inventor:
Thomas A. Edison
by Frank L. Sprague
his Atty.

T. A. EDISON.
 PHONOGRAPH OR TALKING MACHINE.
 APPLICATION FILED DEC. 7, 1910.

1,184,332.

Patented May 23, 1916.

2 SHEETS—SHEET 2.

Fig. 5

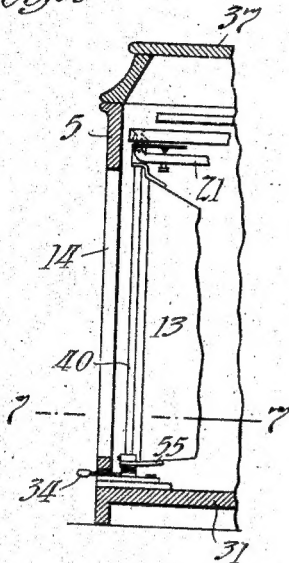


Fig. 6

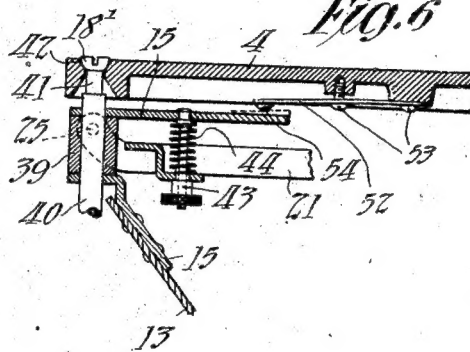


Fig. 7

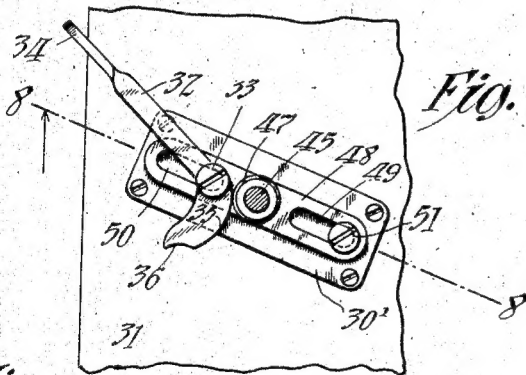
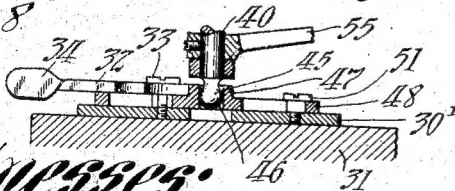


Fig. 8



Witnesses:
 Frank Lewis
 Dyer Smith

Inventor:
 Thomas A. Edison
 by Frank L. Lewis
 His Atty.

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, WEST ORANGE, NEW JERSEY.

PHONOGRAPH OR TALKING-MACHINE.

1,184,332.

Specification of Letters Patent.

Patented May 23, 1916.

Application filed December 7, 1910. Serial No. 596,007.

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, and a resident of Llewellyn Park, West Orange, Essex county, New Jersey, have invented certain new and useful Improvements in Phonographs or Talking-Machines, of which the following is a description.

My invention relates to phonographs or talking machines particularly of the type in which disk or flat records are operated upon, and preferably in which the sound conveying and amplifying horn is inclosed within a suitable cabinet.

In my invention the sound reproducer is carried by the sound conveyer which is connected with the interior of the reproducer, the arm of the sound conveyer to which the reproducer is secured preferably being integral and continuous with the large amplifying horn. The conveyer is pivotally mounted or suspended adjacent the large exit end of the amplifier in such a manner that the whole conveyer and reproducer oscillate about the pivotal means referred to during the reproduction of the record, the mounting of the horn or amplifier being preferably such as also to permit a simple manipulation or adjustment of the same to remove the reproducer from operative position when it is desired to change the record. Also, in the preferred embodiment of my invention, the lateral movement of oscillation of the sound conveyer and reproducer during the reproduction of a record is obtained by the engagement of mechanical means with co-acting driving means, the said mechanical means being secured to the sound amplifier or so mounted as to cause the desired feeding movement of the latter, this mechanical means and the driving means being disengaged by the same adjustment of the sound conveyer, which places the reproducer in inoperative position.

Other objects of my invention reside in the construction of parts and combinations of elements hereinafter more fully disclosed in the following specification and appended claims.

In order that my invention may be more clearly understood, attention is hereby directed to the accompanying drawings forming part of this specification, and in which—

Figure 1 represents a vertical cross section and side elevation of a phonograph or talking machine comprising an inclosing cabinet

and embodying one form of my invention; Fig. 2 represents a top plan view of the same, the cover of the cabinet being removed; Fig. 3 represents an enlarged vertical sectional detail of the means for pivotally supporting the upper side of the horn or sound amplifier, as shown in Fig. 1; Fig. 4 is an enlarged section taken upon line 4—4 of Fig. 1; Fig. 5 is a partial sectional and side elevational view similar to Fig. 1 of a modification of my invention; Fig. 6 is an enlarged sectional detail of the means for pivotally supporting the upper side of the horn or sound amplifier used in connection therewith; Fig. 7 is an enlarged sectional view taken on line 7—7 of Fig. 5; and Fig. 8 is a section taken upon line 8—8 of Fig. 7, certain parts being shown in side elevation.

Referring to the drawings, the sound reproducer 1 carries stylus 2 adapted to reproduce a record carried by turn-table or record support 3, which is mounted upon horizontal support or shelf 4 within the cabinet 5. A suitable motor for rotating turn-table 3 is mounted within casing 6 supported from platform 4. The reproducer 1 is secured to a horizontal arm 7 of sound conveyer and amplifier 8 by a joint 9 permitting a limited up and down and also lateral movement of the reproducer with respect to the arm 7 of the sound conveyer while tracking the record. This joint may be, and preferably is, constructed as shown and described in U. S. Patent to Adolph F. Gall, No. 1,119,269, dated December 1, 1914. The arm 7 of the sound conveyer is rearwardly directed from the reproducer, as shown, to a bend 10, whence it descends vertically past the platform 4 and motor casing 6, being joined by the curved portion 12 to the forwardly directed amplifying exit portion 13 of the horn or conveyer, from the mouth of which the sound reproduced and conveyed is given forth through the opening 14 in the front side of the cabinet into the atmosphere. The sound conveyer and amplifier 8 extends, as shown, from the joint 9 to its mouth without containing a flexible joint. My invention is not limited to this particular construction, but I consider it preferable.

In the embodiment of my invention shown in Figs. 1 to 4 inclusive, the reproducer and sound conveyer are supported as follows:—A bracket 15 is secured to the upper side of the amplifying portion 13 of conveyer 8 adjacent the mouth of the

conveyer, this bracket or lug having a horizontally disposed portion 16, the lower side of which is provided with a spherical or curved recess with a cylindrical opening extending from the same to the upper side of the horizontal member 16. A bolt 17 having a rounded or semi-spherical protuberance 13 upon the lower end thereof is passed through this opening so that the rounded projection 18 is mounted within the curved or spherical recess referred to, the recess and rounded projection 18 being formed to closely fit each other. Bolt 17 is passed through an opening through the horizontal portion of a bracket 19 secured to the front wall of cabinet 5, a knurled nut 20 being threaded upon the upper end of bolt 17 and resting upon the horizontal arm of bracket 19. A sector 21 having gear teeth 22 upon the lower side thereof, as shown, is secured to bracket 15, the gear 22 which is preferably a worm wheel being adapted to engage with a gear, preferably a worm 23, which is rotated by appropriate gearing from the motor contained within casing 6. Preferably, sector 21 is made adjustable with respect to bracket 15 as by forming the same with depending ears 24, through which passes a horizontal pivot pin 25 supported by the bracket 15.

To the lower side of the exit portion 13 of the amplifier is secured a bracket 26 having a portion 27 extending forwardly beyond the mouth of the horn or amplifier 13. This forwardly extending portion 27 is provided with a vertical slot 28 extending in the direction of the axis of the amplifier 13, within which slot engages a vertical pin 29 rising from a plate 30 secured to the upper side of the bottom 31 of the cabinet 5. A lever 32 is pivotally mounted upon a vertical screw or stud 33 secured to the plate 30. This lever 32 is provided with a handle 34 and two curved or cam surfaces 35 and 36.

When the parts of the device are assembled in position, the nut 20 is adjusted until the gear teeth 22 of sector 21 are in position to engage worm 23 and reproducer 1 is in proper position for stylus 2 to engage a record upon support 3. The reproducer and sound conveyer are then in the position indicated by the full lines in Fig. 1 suspended by bolt 17 from bracket 19. Gravity tends to hold the sound conveyer in this position with the pin 29 contacting the inner end of slot 28 in projection 27 of bracket 26. In this position the lower side of projection 27 may rest lightly upon plate 30, and when the machine is operated, worm 23 drives gear 22 to cause sound conveyer 8 to swing about bolt 17 and pin 29 which are in vertical alinement with each other as centers, reproducer 1 thus being fed across the record. The weight of the sound conveyer is supported by bolt 17 and by the pressure of

the inner end of slot 28 upon pin 29, the weight of reproducer 1 alone exerting pressure upon the record through stylus 2. In this feeding movement, bracket 15 turns upon bolt 17 as upon a simple pivot, and the coaction of pin 29 and slot 28 causes a steady movement of the conveyer. The gear teeth 22 are held in mesh with worm 23 by the weight of sector 21 pivoted at 24, or a spring may be used if desired to hold the sector in engagement with the worm, as is illustrated in Fig. 6. The pivotal connection of sector 21 with amplifier 13 permits the easy engagement of the sector with the worm when the stylus 2 is first placed in contact with the record groove of the sound record.

In Fig. 2 of the drawings the reproducer 1 and arm 7 of the sound conveyer are shown in full lines in position for stylus 2 to start the reproduction of the record at the outer edge thereof, the reproducer and arm 7 also being shown in dotted lines in intermediate position and in the position occupied when the reproduction is being completed. The parts should be so arranged that the stylus will track the record grooves centrally at all times. This may be arranged in the manner shown in Fig. 2, in which the face of the diaphragm is approximately radial in intermediate position between the beginning and end of a record, and varies slightly from the radial on each side of the said intermediate position.

When it is desired to disengage the feed and lift the reproducer to disengage the stylus from the record, the sound conveyer 8 may be oscillated in a vertical direction about the ball and socket joint formed by the ball or curved projection upon the end of bolt 17 and the socket or curved recess in horizontal member 16, within which bolt 17 is seated. This may be accomplished by raising the cover 37 of the cabinet, the cover being pivoted at 38 to the cabinet, and lifting the horizontal arm 7 of the sound conveyer, or it may be accomplished by manipulation of handle 34. When handle 34 is rotated from the full line to the dotted line position shown in Fig. 4, the curved surface 35 of the lever contacts the curved end of the projection 27 upon the bracket 26 secured to the amplifying portion 13 of the conveyer, forcing the conveyer to swing rearwardly about the ball 18 seated in its socket as described, the conveyer and reproducer moving from the full line to the dotted line position in Fig. 1. When handle 34 has been moved into the dotted line position, curved surface 36 on the end of lever 32 coacts with the end of projection 27 to hold or lock the horn in its raised position. In this position the gear 22 will be out of mesh with worm 23, and stylus 2 will be out of contact with the record upon turn-table 3. When it is again desired to play a record, 13

reproducer 1 is swung laterally about the vertical pivots to properly position stylus 2 with respect to the sound record, and handle 34 is moved back into the full line position shown in Fig. 4.

It may be noted that the engagement of surface 35 of lever 32 with the end of projection 27 upon bracket 26 causes the lateral pivotal movement of the sound conveyer about pin 29, the projection 27 acting as a lever pivoted at 29 and the reproducer moving toward the outside of the record or in proper position to start the reproduction of a record of the type in which the reproduction is from the periphery toward the center. If, however, the cabinet be seated upon an uneven surface, the free pivotal engagement of slot 28 with pin 29 would permit undesired lateral swinging of the sound conveyer and reproducer when the conveying means were disengaged. Hence, it may be advisable to provide frictional means for somewhat resisting the free lateral pivotal movement of the sound conveyer, as will be described in connection with Fig. 6 of the drawings.

In Figs. 5 to 8 inclusive I have illustrated a slight modification of my invention, in which the bracket 15 is secured to a member 39 to which the sector 21 is pivotally secured at 25, as shown. The vertical bolt 17 of the first described embodiment of my invention is replaced by a vertical rod 40, the upper end of which passes through and is secured to bracket 15 and member 39. A screw 41 is secured to the upper end of rod 40 and has a curved or semi-cylindrical head 18' which is seated within a similarly curved recess 42 in the upper face of horizontal member 4 of the cabinet, screw 41 passing through a conical opening connecting the seat or recess 42 with the lower surface of member 4. A ball and socket joint is thus provided similar to that provided by the curved head 18 upon bolt 17 in Fig. 3 and its socket. The position of sector 21 with respect to bracket 15 may be adjusted by means of screw 43 passing through a horizontal arm of bracket 15 and sector 21 and having a knurled nut threaded upon the end thereof. A spiral spring 44 may be mounted upon screw 43 between the horizontal portion of bracket 15 and the flange of sector 21 through which screw 43 passes, by which means sector 21 is held in engagement with worm 23 by adjustable spring pressure. The vertical adjustment of the sound conveyer may also be regulated by means of tightening or loosening screw 41. In this form of my invention, the vertical rod 40 preferably extends all the way to the lower side of the conveyer in front of the mouth thereof, and is provided at its lower end with an engaging surface 45 which is preferably spherical. Ball 45 engages within a recess 46 in a member 47 secured upon

or integral with a slide 48 provided with vertical slots 49 and 50 therein within which are mounted pin 51 and the pivot pin 33 of lever 32 respectively secured to plate 30' mounted upon the upper side of bottom 31 of cabinet 5. A flat spring 52 is preferably secured to the under side of the frame member 4, as by screws 53 and carries a button or projection 54 adapted to press frictionally on the upper side of the horizontal portion of bracket 15, as shown, to act as a friction means to resist undesired lateral oscillation of the conveyer when the feed is disengaged. A bracket 55 is secured to the lower side of the amplifying end 13 of the sound conveyer and is also secured to the lower end of the rod 40, as shown. In this construction, the operative faces 35 and 36 of lever 32 engage the cylindrical surface of member 47 concentric with the vertical pivotal rod 40, so that there is no tendency to swing the sound conveyer laterally when operating lever 32. When it is desired to disengage the feed and lift the stylus from contact with the record in this form of my invention, the lever 32 is rotated to the left, referring to Fig. 7, surface 35 of the lever camming member 47 to swing rod 40 and sound conveyer 8 about the ball and socket joint 18', 42 just as in the first embodiment of my invention, slide 48 moving upon screws 51 and 33, and surface 36 of lever 32 coacting with member 47 to lock the sound conveyer in its raised position.

It is to be understood that my invention is not limited to the exact details of the embodiments of my invention here disclosed, but may be varied within the terms of the appended claims without departing from the spirit of the invention. In the construction shown, the sound conveyer is supported adjacent its large end so that little force is required to swing the same in a vertical direction about the upper pivot of the conveyer. Obviously, it is not essential, if a ball and socket or other universal joint for supporting the amplifier be used, that the same be located adjacent the upper portion of the amplifier, with lever 32 adjacent the lower side of the amplifier. Any manner of supporting the amplifier, permitting the necessary movements thereof, as described, and means for moving the same to adjust the position of the feeding devices, and the reproducer, as claimed, are within the scope of my invention.

Having now described my invention, what I claim as new therein and desire to protect by Letters Patent is as follows:—

1. In a phonograph or talking machine, the combination of a sound conveyer having an amplifying mouth portion, a mounting for said conveyer permitting the same to move about a given axis, and means for moving said conveyer about said axis, said means

comprising a driving member and a sector carried by said mouth portion, said sector being movable upwardly and downwardly relatively to said conveyer and being held by its weight in engagement with said driving member, substantially as described.

2. In a device of the class described, the combination of a record support, a reproducer in operative relation thereto, a cabinet, and a sound conveyer connected to said reproducer and extending without flexible joint rearwardly from a point in proximity to said reproducer, then vertically past said record support, and then forwardly with respect to said support in the form of an amplifying exit portion located within said cabinet, said conveyer being pivoted for oscillation about a vertical axis located a substantial distance in front of said reproducer, substantially as described.

3. In a device of the class described, the combination of a record support, a reproducer in operative relation thereto, and a sound conveyer connected to said reproducer and extending without flexible joint rearwardly from a point in proximity to said reproducer, then downwardly past said record support, and then forwardly with respect to said support in the form of an amplifying exit portion, said conveyer being pivoted for oscillation about a vertical axis located in close proximity to the extremity of said exit portion and a substantial distance in front of said reproducer, substantially as described.

4. In a device of the class described, the combination of a record support, a reproducer in operative relation thereto, a cabinet having an opening therein, and a sound conveyer connected to said reproducer and extending without flexible joint from a point above said record support and in proximity to said reproducer to the space below said record support, the said conveyer terminating in an amplifying exit portion located within said cabinet and directed toward said opening and being pivoted for oscillation about a vertical axis located adjacent said opening, substantially as described.

5. In a phonograph or talking machine, the combination with a reproducer and a sound conveyer carrying and connected with the same and having a substantially horizontal amplifying exit portion, of a frame member, a member suspended from said frame and supporting said conveyer at said exit end with a universal joint, and means rotatably supporting the lower side of said exit portion adapted to be moved in the axial direction of said exit portion, and lever means for so moving the same to swing said conveyer about said joint, against gravity, into an adjusted position, substantially as described.

6. In a phonograph or talking machine,

the combination of a reproducer, a sound conveyer carrying and connected with said reproducer and having an amplifying exit portion, driving means, and feeding means for said conveyer coacting with said driving means and pivoted to said exit portion for movement toward and away from said driving means, said conveyer being pivoted to permit movement thereof by said feeding means and being movable to disengage said feeding means from said driving means, substantially as described.

7. In a device of the class described, the combination of a record support, a reproducer in operative relation thereto, a sound conveyer connected to said reproducer and extending without flexible joint rearwardly from a point in proximity to said reproducer then downwardly past said record support, and then forwardly with respect to said support in the form of an amplifying exit portion, said conveyer being pivoted for oscillation about a vertical axis located at its exit end and a substantial distance from said reproducer, and means for moving said conveyer to raise or lower said reproducer with respect to said record support, substantially as described.

8. In a phonograph or talking machine, the combination with a reproducer, and a sound conveyer carrying the same and having an amplifying exit portion, of means for supporting one side of said conveyer at said exit portion with a universal joint, means rotatably supporting the opposite side of said conveyer at said exit portion, said last named means permitting said conveyer to be swung about said joint in the axial direction of said exit portion, and means coacting with said last named means for shifting said conveyer in said direction, substantially as described.

9. In a device of the class described, the combination of a record support, a reproducer in operative relation thereto, a cabinet, a sound conveyer connected to said reproducer and extending without flexible joint rearwardly from a point in proximity to said reproducer then downwardly past said record support, and then forwardly with respect to said support in the form of an amplifying exit portion located within said cabinet, means for pivoting said conveyer for oscillation about a vertical axis located at the exit end of said conveyer and a substantial distance from said reproducer, and feeding means for moving said conveyer about said axis to progress said reproducer across the surface of a record carried by said support, said conveyer being movable to render said feeding means inoperative, substantially as described.

10. In a device of the class described, the combination of a record support, a reproducer in operative relation thereto, a cabi-

net, a sound conveyer connected to said reproducer and extending without flexible joint rearwardly from a point in proximity to said reproducer then downwardly past said record support, and then forwardly with respect to said support in the form of an amplifying exit portion located within said cabinet, means for pivoting said conveyer for oscillation about a vertical axis located a substantial distance from said reproducer, feeding means for moving said conveyer about said axis to progress said reproducer across the surface of a record carried by said support, and unitary means for moving said conveyer to render said feeding means inoperative, and to lift said reproducer from the record surface, substantially as described.

11. In a phonograph or talking machine, the combination with a record support, a sound conveyer having an amplifying exit portion, a reproducer carried by said conveyer, means connected with said conveyer and comprising a rack and driving means therefor for feeding said reproducer across the surface of a record carried by said support, of means for supporting one side of said conveyer with a universal joint, means for rotatably supporting the opposite side of said conveyer, said last named means being adjustable to permit movement of the conveyer about said joint in a direction to cause the disengagement of said rack from said driving means and the disengagement of the reproducer from the record surface, and means for adjusting said last named supporting means to move said conveyer in said direction, substantially as described.

12. In a phonograph or talking machine, the combination with a reproducer and a record support, of a sound conveyer connected with said reproducer and carrying the same, extending rearwardly therefrom and then bending and extending forwardly with a sound amplifying exit portion, feeding means secured to the exit portion of said conveyer, coacting means and a motor connected to drive the same, and means supporting said conveyer adjacent its exit end arranged to permit pivotal movement of said conveyer about the same during the feeding movement of said reproducer and pivotal adjustment of said conveyer about the same to disengage said feeding means from said coacting means, substantially as described.

13. In a phonograph or talking machine, the combination with a reproducer, of a sound conveyer connected therewith and carrying the same and having an enlarged amplifying exit end extending in a generally horizontal direction, a member to which the upper portion of said exit end is pivotally secured, and means adapted to coact with the lower portion of said exit end to

swing said conveyer about said member into an adjusted position, substantially as described.

14. In a phonograph or talking machine, the combination with a reproducer, of a sound conveyer connected therewith and carrying the same and having an enlarged amplifying exit end extending in a generally horizontal direction, a member to which one portion of said exit end is pivotally secured and means adapted to coact with the side of said end opposite to said pivot to swing said conveyer about said pivot into an adjusted position, substantially as described.

15. In a device of the class described, the combination of a record support, a reproducer in operative relation thereto, a cabinet, a sound conveyer carrying said reproducer and extending rearwardly from a point in proximity to said reproducer, then downwardly past said record support, and then forwardly with respect to said support in the form of an amplifying exit portion located within said cabinet, and means coacting with the exit end of said conveyer for lifting said conveyer to move said reproducer away from said record support, substantially as described.

16. In a phonograph or talking machine, the combination with a reproducer and a sound conveyer carrying and connected with the same and having a substantially horizontal amplifying exit portion, of a frame, means suspending the upper side of said exit portion from said frame, and a cam lever positioned to coact with the lower part of said exit portion, adapted on actuation to raise the center of mass of said conveyer and hold said conveyer in such elevated position, substantially as described.

17. In a phonograph or talking machine, the combination with a reproducer and a sound conveyer carrying and connected with the same and having a substantially horizontal amplifying exit portion, of a frame member, a member suspended from said frame and supporting said conveyer at said exit end with a universal joint, means rotatably supporting the lower side of said exit portion, means movable with said conveyer, and friction means applied to said last named means to resist lateral movement of said conveyer, substantially as described.

18. In a phonograph or talking machine, the combination with a record support, a reproducer, and a sound conveyer carrying said reproducer and movably mounted to permit free movement of the reproducer across and into and out of engagement with the surface of a record carried by said support, of means tending to yieldingly resist lateral movement of the conveyer during the movement of the reproducer above the por-

tion of the record to be reproduced, said means being rendered operative and inoperative respectively by the movements of the conveyer in disengaging the reproducer from and engaging the same with the record surface, substantially as described.

19. In a phonograph or talking machine, the combination with a record support, a reproducer, and a sound conveyer carrying said reproducer and movably mounted to permit free movement of the reproducer across and into and out of engagement with the surface of a record carried by said support, of friction means tending to resist lateral movement of the conveyer during the movement of the reproducer above the portion of the record to be reproduced, said means being rendered operative and inoperative respectively by the movements of the conveyer in disengaging the reproducer from and engaging the same with the record surface, substantially as described.

20. In a phonograph or talking machine, the combination of a record support, a reproducer, a pivotally supported sound conveyer connected thereto, and means for feeding said reproducer across the surface of a record carried by said support, said means comprising a driving member and a rack pivoted to said conveyer and movable by gravity into engagement with said driving member, and means for adjusting said rack on its pivot with respect to said member, substantially as described.

21. In a phonograph or talking machine, the combination of a cabinet, a sound conveyer within said cabinet and having an amplifying exit portion, a reproducer carried by said conveyer, a member to which one side of said exit portion is pivotally connected and means extending outside of said cabinet and adapted to coact with the side of said exit portion opposite to said member to swing said conveyer about said member into an adjusted position, substantially as described.

22. In a phonograph or talking machine, the combination of a cabinet, a sound conveyer within said cabinet and having an amplifying exit portion, feeding means secured to said conveyer, driving means coacting therewith, a member to which one side of said exit portion is pivotally connected, and means extending outside of said cabinet and adapted to coact with the side of said exit portion opposite to said member to swing said conveyer about said member to disengage said feeding means from said driving means, substantially as described.

23. In a phonograph or talking machine, the combination of a cabinet, a record support, a sound conveyer having an amplifying exit portion within said cabinet, a reproducer carried by said conveyer, means

connected with said conveyer and comprising a rack and driving means therefor for feeding said reproducer across the surface of a record carried by said support, of means for supporting one side of said conveyer with a universal joint, means for rotatably supporting the opposite side of said conveyer, said last named means being adjustable to permit movement of the conveyer about said joint in a direction to cause the disengagement of said rack from said driving means and the disengagement of the reproducer from the record surface, and means extending outside of said cabinet for adjusting said last named supporting means to move said conveyer in said direction, substantially as described.

24. In a phonograph or talking machine, the combination of a record support, a sound conveyer, a reproducer connected therewith, driving means, means coacting with said driving means for feeding said reproducer across the surface of a record carried by said support, and means tending to resist lateral movement of said conveyer, said last named means being automatically rendered operative and inoperative respectively by the disengagement of the said feeding means from and the engagement of the same with said driving means, substantially as described.

25. In a phonograph or talking machine, the combination of a record support, a sound conveyer, a reproducer connected therewith, driving means, means coacting with said driving means for feeding said reproducer across the surface of a record carried by said support, and friction means tending to resist lateral movement of said conveyer, said last named means being automatically rendered operative and inoperative respectively by the disengagement of the said feeding means from and the engagement of the same with said driving means, substantially as described.

26. In a device of the class described, the combination of a record support, a reproducer in operative relation thereto, a cabinet, and a sound conveyer to which said reproducer is connected for limited up and down and lateral movement, said conveyer extending without flexible joint rearwardly from a point in proximity to said reproducer, then downwardly past said record support, and then forwardly with respect to said support in the form of an amplifying exit portion located within said cabinet, the exit end of said conveyer being pivoted for oscillation about a vertical axis located a substantial distance in front of said reproducer, substantially as described.

27. In a phonograph or talking machine, the combination of a record support, a reproducer in operative relation thereto, a movable sound conveyer carrying said repro-

ducer, a stationary member and means co-acting with the exit end of said conveyer and with said member for shifting said conveyer to move said reproducer away from said record support, substantially as described.

28. In a phonograph or talking machine, the combination of a record support, a reproducer in operative relation thereto, a movable sound conveyer carrying said reproducer and having a mouth open to the atmosphere, feeding means for moving said conveyer to progress said reproducer across the surface of a record carried by said support, a stationary member and means co-acting with the exit end of said conveyer and with said member for shifting said conveyer to move said reproducer away from the record surface and to render said feeding means inoperative, substantially as described.

29. In a phonograph or talking machine, the combination of a record support, a reproducer in operative relation thereto, a cabinet, a movable sound conveyer carrying said reproducer and having its exit portion within said cabinet, and means coacting with said cabinet and the mouth of said conveyer for shifting said conveyer to move said reproducer away from said record support, substantially as described.

30. In a phonograph or talking machine, the combination of a record support, a reproducer in operative relation thereto, a cabinet, a movable sound conveyer carrying said reproducer and having its exit portion within said cabinet, a stationary member and means coacting with the exit end of said conveyer and with said member and extending without said cabinet for shifting said conveyer to move said reproducer away from said record support, substantially as described.

31. In a phonograph or talking machine, the combination of a record support, a reproducer in operative relation thereto, a cabinet, a movable sound conveyer carrying said reproducer and having its exit portion within said cabinet, feeding means for moving said conveyer to progress said reproducer across the surface of a record carried by said support, and means coacting with the mouth of said conveyer and said cabinet for shifting said conveyer to move said reproducer away from the record surface and to render said feeding means inoperative, substantially as described.

32. In a phonograph or talking machine, the combination of a sound conveyer having an amplifying mouth portion, a reproducer connected to said conveyer, a mounting for said conveyer permitting the same to move with said reproducer, feeding means carried by said mouth portion, and means adapted to coact with said feeding means to drive

the same, said feeding means comprising a pivoted sector held by its weight in engagement with said driving means, substantially as described.

33. In a device of the class described, the combination of a record support, a reproducer in operative relation thereto, a sound conveyer connected to said reproducer, and extending without flexible joint rearwardly from a point in proximity to said reproducer, then downwardly past said record support, and then forwardly with respect to said record support in the form of an amplifying exit portion, means for pivoting said conveyer for oscillation about a vertical axis located at the exit end of said conveyer and a substantial distance from said reproducer, and feeding means for moving said conveyer about said axis to progress said reproducer across the surface of a record carried by said support, said conveyer being movable to render said feeding means inoperative, substantially as described.

34. In a phonograph or talking machine, the combination of a record support, a reproducer in operative relation thereto, a movable sound conveyer carrying said reproducer, and means coacting with the mouth of said conveyer and movable relatively to said conveyer in a substantially horizontal direction for shifting the same to move said reproducer away from said record support, substantially as described.

35. In a phonograph or talking machine, the combination of a record support, a reproducer in operative relation thereto, a movable sound conveyer carrying said reproducer, and means comprising a lever coacting with the mouth of said conveyer and movable about an axis at an angle to the horizontal for shifting said conveyer to move the same away from said record support, substantially as described.

36. In a phonograph, the combination of a horizontal record support, an amplifier, a reproducer carried thereby, means for supporting said amplifier for rotation on a vertical axis, said supporting means permitting oscillation of said amplifier on a horizontal axis, a fixed support, and means mounted thereon and cooperating with said amplifier at its large end for oscillating said amplifier on its horizontal axis to an extent sufficient for the disengagement of the reproducer from a record carried by said support, substantially as described.

37. In a phonograph, the combination of a horizontal record support, an amplifier, a reproducer carried thereby, means for supporting said amplifier for rotation on a vertical axis adjacent the exit end of said amplifier, said supporting means permitting oscillation of said amplifier on a horizontal axis, a fixed support, and means mounted thereon and cooperating with said amplifier

at its large end for oscillating said amplifier on its horizontal axis to an extent sufficient for the disengagement of the reproducer from a record carried by said support, substantially as described.

38. In a phonograph, the combination of a horizontal record support, an amplifier, a reproducer carried by said amplifier and movable upwardly and downwardly with respect thereto, means for supporting said amplifier for rotation on a vertical axis, said supporting means permitting oscillation of said amplifier on a horizontal axis, a fixed support, and means mounted thereon and cooperating with said amplifier at a point adjacent its large end for oscillating said amplifier on its horizontal axis to an extent sufficient for the disengagement of the reproducer from a record carried by said support, substantially as described.

39. In a phonograph, the combination of a horizontal record support, an amplifier, a reproducer stylus, supporting means for said stylus connected to said amplifier, means supporting said amplifier for rotation on a vertical axis, said amplifier supporting means permitting oscillation of said amplifier on a horizontal axis, a fixed support, and means mounted thereon and cooperating with said amplifier at its large end for oscillating said amplifier on its horizontal axis to an extent sufficient for the disengagement of the reproducer stylus from a record carried by said record support, substantially as described.

40. In a phonograph, the combination of a horizontal record support, a curved amplifier, a reproducer carried thereby, means for supporting said amplifier for rotation on a vertical axis, said supporting means permitting oscillation of said amplifier on a horizontal axis, a fixed support, and means mounted thereon and cooperating with said amplifier at its large end for oscillating said amplifier on its horizontal axis to an extent sufficient for the disengagement of the reproducer from a record carried by said support, substantially as described.

41. In a phonograph, the combination of a horizontal record support, an amplifier extending from the space above said support to the space below the same, a reproducer carried by said amplifier, means for supporting said amplifier for rotation on a vertical axis, said supporting means permitting oscillation of said amplifier on a horizontal axis, a fixed support, and means mounted thereon and cooperating with said amplifier at a point adjacent its large end for oscillating said amplifier on its horizontal axis to an extent sufficient for the disengagement of the reproducer from a record carried by said support, substantially as described.

This specification signed and witnessed this 5th day of December, 1910.

THOS. A. EDISON.

Witnesses:

DYER SMITH,
ANNA R. KLEHM.

Correction in Letters Patent No. 1,184,332.

It is hereby certified that in Letters Patent No. 1,184,332, granted May 23, 1916, upon the application of Thomas A. Edison, of Llewellyn Park, West Orange, New Jersey, for an improvement in "Phonographs or Talking-Machines," an error appears in the printed specification requiring correction as follows: Page 8, lines 15-16, claim 38, strike out the words "a point adjacent"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 13th day of February, A. D., 1917.

[SEAL.]

R. F. WHITEHEAD,
Acting Commissioner of Patents.

Cl. 181-3.